STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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Bureau of Air Quality

Memorandum

To: Blue Ribbon Commission on Solid Waste Management (c/o Paula Clark, BRWM)

From: Bryce Sproul, Bureau of Air Quality Eric Kennedy for Bryce Sproul

Date: September 22, 2006

Subject: Air Emission License Compliance Summary for Maine Energy Recovery Company

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Please find attached a summary of compliance for Maine Energy Recovery Company (MERC), located in Biddeford, Maine, with respect to applicable state and federal air quality related requirements contained in their Air Emission License. This summary of compliance was developed for use by the Blue Ribbon Commission on Solid Waste Management at the request of the Bureau of Remediation and Waste Management (BRWM).

Any questions relative to the attached compliance summary should be directed to Bryce Sproul, Director of Licensing and Enforcement for the Bureau of Air Quality Control. Bryce's contact information is as follows:

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Following is a glossary of terms for some abbreviations that may not be familiar to everyone on the Blue Ribbon Commission:

MMBtu/hr – Million British Thermal Units per Hour
ppmvd – parts per million on a dry volume basis
mg/dscm – milligrams per dry standard cubic meter

Summary of MERC Emission Standards, Compliance Demonstration Methods and Present Compliance Status (January 1, 2004 through June 2006)

Introduction:
Maine Energy is a Refuse Derived Fuel (RDF) waste-to energy facility located in Biddeford, Maine. The facility operates two municipal waste combustion units (MWC) which are rated at a maximum heat input capacity of 150 MMBtu/hr. Each unit is capable of firing RDF at a rate of 14 tons/hr. This document summarizes the air emission license restrictions on the two combustion units and the methods upon which compliance with the restrictions is demonstrated.

Emission Standards

Particulate Matter:
The facility's air emission license restricts Particulate matter (PM, PM_{10}) emissions to no greater than 24mg/dscm @ 7% O_2 from each MWC and no greater than 7.46 lb/hr from the combined stack. Particulate matter emissions are controlled by the operation and maintenance of a multicyclone followed by a fabric filter. Compliance with the particulate matter restrictions is demonstrated through annual stack emission testing.

Visible Emissions:
The facility's air emission license restricts visible emissions from the combined stack to no greater than 10% opacity on a six-minute block average. Compliance with the visible emissions limit is demonstrated by means of a continuous opacity monitoring system (COMS) installed on the common stack. Maine Energy is required to conduct performance testing for opacity monitors on an annual basis.

Sulfur Dioxide (SO_2):
The facility's air emission license restricts SO_2 emissions from each MWC to no greater than 29ppmvd @ 7% O_2 (or a minimum control efficiency of 80%, which ever is less stringent) from each MWC averaged over a 24 hour period and to no greater than 24 lb/hr from the combined stack. SO_2 emissions are controlled by a spray dryer followed by a fabric filter. Compliance with SO_2 emission limits is demonstrated by means of a SO_2 continuous emission monitoring system (CEMS). The SO_2 CEMS is installed on the common stack.

Nitrogen Oxide (NO_x):
The facility's air emission license restricts NO_x emissions from each MWC to no greater than 230ppmvd @ 7% O_2 from each MWC averaged over a 24 hour period and to no greater than 136.8 lb/hr from the combined stack. Compliance with NOx emission limits is demonstrated by means of a NOx CEMS installed on the common stack.

Carbon Monoxide:
The facility's air emission license restricts carbon monoxide (CO) emissions to no greater than 200 ppmvd @ 7% O_2 from each MWC averaged over a 24 hour period and to no

greater than 72.4 lb/hr from the combined stack. Compliance with CO emission limits is demonstrated by means of a CO CEMS. The CO CEMS is installed on the common stack.

Toxic Air Pollutants:

The facility's air emission license also restricts the emissions of certain toxic air pollutants, which are not required to be monitored on a continuous basis. The following table summarizes the emissions restrictions for these pollutants:

Pollutant	Limit	Units
Volatile Organic Compounds (VOC)	67	mg/dscm @ 7% O_2
Acid Gases (HCl)	29[a]	ppmvd @ 7% O_2
Lead (Pb)	0.44	mg/dscm @ 7% O_2
Cadmium (Cd)	0.04	mg/dscm @ 7% O_2
Mercury (Hg)	0.028[b]	mg/dscm @ 7% O_2
Dioxin & Furans (PCDD/PCDF)	30	ng/dscm @ 7% O_2

a. For HCl each MWC shall achieve 29 ppmvd @ 7% O_2 or a minimum control efficiency of 95 percent, whichever is less stringent.
b. For Hg each MWC unit shall achieve 0.028 mg/dscm @ 7% O_2 or a minimum control efficiency of 85 percent, whichever is less stringent.

Demonstrating Compliance with Standards

Compliance with the above pollutant standards required by the facility's air emission license is demonstrated by several means. Stack emission testing is conducted on prescribed timeframes such as on an annual basis for particulates and every three years for certain toxic air emissions. Parameter monitoring occurs continuously, measuring operational parameters which are used as surrogate indicators of compliance with standards. Continuous emission and opacity monitors also operate continuously measuring concentrations of criteria pollutants and the density of the smoke coming from the stack.

Stack Testing:
Maine Energy is required to perform **annual** stack tests for particulate matter, cadmium, lead, mercury, dioxin and furans and hydrogen chloride gases. Stack tests are required **every three years** for arsenic, nickel, chromium and beryllium. All stack testing is conducted based on a pre-approved stack testing protocol and is observed by DEP personnel. The Department may order additional stack testing at any time.

Parameter Monitoring:
Maine Energy is required to adhere to certain operational practices to ensure that the facility is operating in a manner consistent with good air pollution control for minimizing emissions. Compliance with these operational practices is demonstrated through **continuous** parameter monitoring for MWC unit load level as steam flow or feed water as well as the baghouse inlet temperature. These parameter values are set ranges

determined by actual stack emission testing which demonstrate compliance with standards. Maine Energy's air emission license requires that these parameter monitors be recording accurate and reliable data for 98% of the time the source is operating, except for periods when performing established quality assurance and quality control procedures or during unavoidable malfunctions.

Continuous Emission Monitoring Systems (CEMS)

Maine Energy is required to **continuously** operate CEMS for sulfur dioxide, nitrogen oxides and carbon monoxide. Continuous operation of these monitors is defined in State Law (38 MRSA 589(3)) and means that they are to be recording accurate and reliable data no less than 90% of the time the source is operating, except for periods when performing established quality assurance and quality control procedures or during unavoidable malfunctions. CEMS outputs are based on one hour averages.

Maine Energy's air emission license requires the facility to conduct **yearly** Relative Accuracy Testing (RATA) and/or Performance Audits on all monitors and to develop and maintain an updated quality assurance plan for all CEMS and COMS in accordance with Federal Regulation, 40 CFR Part 60 Appendix F and Chapter 117 of the Department's Regulations.

Maine Energy's air emission license also requires the facility to conduct **quarterly** cylinder gas audits (CGAs) for the CEMs in three of four calendar quarters as required by EPA Regulation, 40 CFR Part 60 Appendix F and Chapter 117 of the Department's Regulations. A CGA is a test where the monitor is challenged with audit gases of known concentrations at two points to determine its accuracy.

Maine Energy's air emission license requires the facility to check, record and quantify the calibration drift (CD) of the CEMs at two concentration values at least once **daily** (approximately 24 hours) as required by Federal Regulation, 40 CFR Part 60 Appendix F and Chapter 117 of the Department's Regulations. CD is defined as the difference in the monitor output reading as compared to an established reference value after a stated period of operation.

Continuous Opacity Monitoring System (COMS)

Maine Energy's air emission license requires the facility to **continuously** monitor opacity in the stack. Continuous operation of this monitor is defined in State Law (38 MRSA 589(3)) and means that they are to be operating for no less than 95% of the time the source is operating, except for periods when performing established quality assurance and quality control procedures or during unavoidable malfunctions. COMS outputs are based on six minute averages.

Similar to the CEMS, the continuous opacity monitors are required to conduct an **annual** 7-day drift test and **quarterly** audits.

Compliance Status (1/1/04 through 6/2006)

Volatile Organic Compounds

Maine Energy is in compliance with their air emission license.

The DEP is not in agreement with the City of Biddeford concerning the quantity of Volatile Organic Compounds emitted from Maine Energy's tipping room floor. Extensive testing was undertaken by Maine Energy to quantify those emissions. The disagreement between the City and DEP concerns the interpretation of those results. Due to the dispute, the City filed a "60-Day Notice of Intent to Sue Under the Clean Air Act" against Maine Energy. EPA subsequently requested and received additional information and operating records from Maine Energy. Based on conversations with EPA on September 1, 2006, EPA was nearing completion of their review of the material.

Ambient Air Standards

Maine Energy is required to comply with emission standards for particulate matter, sulfur dioxide, carbon monoxide, nitrogen oxides, visible emissions in the form of opacity, volatile organic compounds, hydrochloric acid gases, lead, cadmium, mercury, dioxin and furans, arsenic, chromium, nickel and beryllium. Maine Energy is in compliance with these limits with very few exceptions as noted below.

All excess emission events were appropriately documented on an Initial Notification for Excess Emissions form and forwarded on time to the Department as required by 38 MRSA § 605. During the review period (January 1, 2004 to June 2006) a total of twelve events occurred and of those, seven were not granted for exemption from enforcement, while the remaining five were. State Law, 38 MRSA § 349(9)(A), requires that the Department grant requests for exemption from enforcement for excess emissions resulting from start up, shut down and unavoidable malfunction. Of the seven events not granted exemption, either considered alone or in conjunction with each other, those events did not rise to the level of significance to warrant an enforcement action. Should future non-compliance occur which warrants an enforcement action, those seven events will be included and assessed penalties.

In 2001, the City of Biddeford enacted its own Air Toxics Ordinance that required a number of facilities within its borders to conduct monitoring and modeling of their toxic air emissions to determine if those emissions were within the limits specified in the Ordinance. Maine Energy has conducted the monitoring and modeling required by the Ordinance and those results have been submitted to the City.

Reporting Requirements

Maine Energy is in compliance with all required reporting requirements.

Maine Energy is required to provide certain reports within specified timeframes to the Department. Those reports include; Initial Notification for Excess Emissions and Malfunction, Quarterly Excess Emission reports including all CEM/COM audit results, Semiannual Compliance Certification and Annual Compliance Certification. During the reporting period all reports and certifications have been complete and submitted on time.